2 Product Specifications

2-1 Specifications

Item	Description	
	GH15LS/GH15ES	GH15MS
LCD Panel	TFT-LCD panel, RGB vertical stripe, normaly white, 15-Inch viewable, 0.297 (H) pixel pitch	
Scanning Frequency	Horizontal : 30 kHz ~ 61 kHz (Referring ~ Timing chart, Page 2-3, 2-4) Vertical : 50 Hz ~ 75 Hz (Referring ~ Timing chart, Page 2-3, 2-4)	
Display Colors	16,003,008 colors	
Maximum Resolution	Horizontal : 1024 Pixels Vertical : 768 Pixels	
Input Video Signal	Analog, 0.714 Vp-p ± 5% positive at 75 Ω, internally terminated	
Input Sync Signal	Type: Seperate H/V sync, Composite H/V, Sync-on-Green, automatic synchronization without external switch of sync type Level: TTL level	
Maximum Pixel Clock rate	80 MHz	
Active Display Horizontal/Vertical	304.1 mm / 228.1 mm	
AC power voltage & Frequency	AC 90 ~ 264 Volts, 60/50 Hz ~ 12V/3A	
Power Consumption	25 W (normal)	
Dimensions Unit (W x D x H) With Simple Stand Without Simple stand With Pivot Stand Without Pivot Stand	 15.4 x 15.1 x 6.8 Inches (391.4 x 383.6 x 173 mm) 15.4 x 11.5 x 2.5 Inches (391.4 x 292.8 x 64.0 mm) 15.4 x 15.1 x 6.8 Inches (391.4 x 383.6 x 173 mm) 15.4 x 17.1 x 6.8 Inches (391.4 x 433.6 x 173 mm) 15.4 x 11.5 x 2.5 Inches (391.4 x 292.8 x 64.0 mm)	 16.5 x 15.2 x 6.8 Inches (417.9 x 386.1 x 173 mm) 16.5 x 11.7 x 2.5 Inches (417.9 x 297.9 x 64.2 mm) 16.5 x 15.2 x 6.8 Inches (417.9 x 386.1 x 173 mm) 16.5 x 17.2 x 6.8 Inches (417.9 x 436.1 x 173 mm) 16.5 x 11.7 x 2.5 Inches (417.9 x 297.9 x 64.2 mm)
Weight (Net/Gross)	4.2 kg (9.3 lbs) / 5.2 kg (11.5 lbs)	4.3 kg (9.5 lbs) / 5.5 kg (12.1 lbs)
Environmental Considerations	Operating Temperature : 50 °F ~ 104 °F (10 °C ~ 40 °C) Humidity : 10 % ~ 80 % Storage Temperature : 13 °F ~ 113 °F (-25 °C ~ 45 °C) Humidity : 5 % ~ 95 %	
Audio Characteristics (GH15MS)	• Built-in Microphone: High-sensitivity condenser microphone (mono) • Audio input: Left/Right Stereo phone jack, 0.5 Vrms • Sound output: 1.0 W (left) + 1.0 W (right)/THD 1% at 8ohm • Frequency response: 80 Hz~20 kHz (at –3dB) • Headphone: Max 50mW output (3.5-pi jack) • Speaker: Internal semi Dome (16ohm x 2)	
• GH15LS/GH15ES/GH15MS complies with SWEDAC (MPR II) recommendations for reduced electromagnetic fields. • Designs and specifications are subject to change without prior notice.		

2-2 Pin Assignments

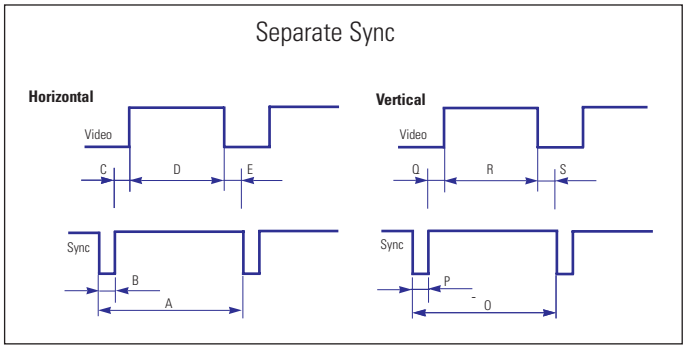
Sync Type / Pin No.	15-Pin Signal Cable Connector		
	Separate	**Composite**	**Sync-on-green**
1	Red	Red	Red
2	Green	Green	Green + H/V Sync.
3	Blue	Blue	Blue
4	GND	GND	GND
5	GND (DDC Return)	GND (DDC Return)	GND (DDC Return)
6	GND-R	GND-R	GND-R
7	GND-G	GND-G	GND-G
8	GND-B	GND-B	GND-B
9	No Connection	No Connection	Not Used
10	GND-Sync./Self Test	GND-Sync./Self Test	GND-Sync./Self Test
11	GND	GND	GND
12	DDC Data	DDC Data	DDC Data
13	H-Sync.	H/V-Sync.	Not Used
14	V-Sync.	Not Used	Not Used
15	DDC Clock	DDC Clock	DDC Clock

2-3 Timing Chart

This section of the service manual describes the timing that the computer industry recognizes as standard for computer-generated video signals.

Table 2-1. Timing Chart

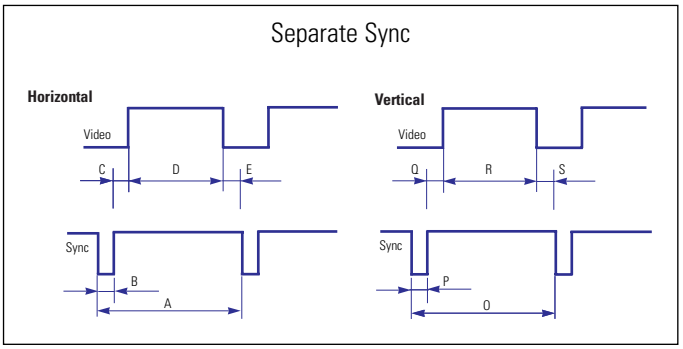
Mode / Timing	IBM			VESA			
	VGA1/70 Hz 640 x 350	VGA2/70 Hz 720 x 400	VGA3/60 Hz 640 x 480	640/72 Hz 640 x 480	640/75 Hz 640 x 480	800/56 Hz 800 x 600	800/60 Hz 800 x 600
fH (kHz)	31.469	31.469	31.469	37.861	37.500	35.156	37.879
A µsec	31.778	31.777	31.778	26.413	26.667	28.444	26.400
B µsec	3.813	3.813	3.813	1.270	2.032	2.000	3.200
C µsec	1.589	1.589	1.589	3.810	3.810	3.556	2.200
D µsec	26.058	26.058	26.058	20.825	20.317	22.222	20.000
E µsec	0.318	0.318	0.318	0.508	0.508	0.667	1.000
fV (Hz)	70.086	70.087	59.940	72.809	75.000	56.250	60.317
O msec	14.268	14.268	16.683	13.735	13.333	17.778	16.579
P msec	0.064	0.064	0.064	0.079	0.080	0.057	0.106
Q msec	1.716	0.858	0.794	0.528	0.427	0.626	0.607
R msec	11.504	13.155	15.761	13.100	12.800	17.067	15.840
S msec	0.985	0.191	0.064	0.026	0.027	0.028	0.026
Clock Frequency (MHz)	25.175	28.322	25.175	31.500	31.500	36.000	40.000
Polarity H.Sync	Positive	Negative	Negative	Negative	Negative	Positive	Positive
V.Sync	Negative	Positive	Negative	Negative	Negative	Negative	Positive
Remark	Separate	Separate	Separate	Separate	Separate	Separate	Separate



A : Line time total	B : Horizontal sync width	O : Frame time total	P : Vertical sync width
C : Back porch	D : Active time	Q : Back porch	R : Active time
E : Front porch		S : Front porch	

Table 2-1. Timing Chart (Continued)

Mode / Timing	VESA					MAC.	
	800/72 Hz 800 x 600	**800/75 Hz 800 x 600**	**1024/60Hz 1024x768**	**1024/70Hz 1024x768**	**1024/75Hz 1024x768**	**640/67 Hz 640 x 480**	**832/75 Hz 832 x 624**
fH (kHz)	48.077	46.875	48.363	56.476	60.023	35.000	49.726
A µsec	20.800	21.333	20.677	17.707	16.660	28.571	20.110
B µsec	2.400	1.616	2.092	1.813	1.219	2.116	1.117
C µsec	1.280	3.232	2.462	1.920	2.235	3.175	3.910
D µsec	16.000	16.162	15.754	13.653	13.003	21.164	14.524
E µsec	1.120	0.323	0.369	0.320	0.203	2.116	0.559
fV (Hz)	72.188	75.000	60.004	70.069	75.029	66.667	74.551
O msec	13.853	13.333	16.666	14.272	13.328	15.000	13.414
P msec	0.125	0.064	0.124	0.106	0.050	0.086	0.060
Q msec	0.478	0.448	0.600	0.513	0.466	1.114	0.784
R msec	12.480	12.800	15.880	13.599	12.795	13.714	12.549
S msec	0.770	0.021	0.062	0.053	0.017	0.086	0.020
Clock Frequency (MHz)	50.000	49.500	65.000	75.000	78.750	30.240	57.284
Polarity H.Sync	Positive	Positive	Negative	Negative	Positive	Negative	Negative
V.Sync	Positive	Positive	Negative	Negative	Positive	Negative	Negative
Remark	Separate	Separate	Separate	Separate	Separate	Separate	Separate



A : Line time total	B : Horizontal sync width	O : Frame time total	P : Vertical sync width
C : Back porch	D : Active time	Q : Back porch	R : Active time
E : Front porch		S : Front porch	